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(54) Abstract Title: Drilling system and method for controlling equivalent circulating density during drilling of wellbores

(57) A drilling system for drilling subsea wellbores includes a tubing-conveyed drill bit that passes through a subsea wellhead. Surface supplied drilling fluid flows through the tubing, discharges at the drill bit, returns to the wellhead through a wellbore annulus, and flows to the surface via a riser extending from the wellhead. A flow restriction device positioned in the riser restricts the flow of the returning fluid while an active fluid device controllably discharges fluid from a location below to just above the flow restriction device in the riser, thereby controlling bottomhole pressure and equivalent circulating density ("ECD"). Alternatively, the fluid is discharged into a separate return line thereby providing dual gradient drilling while controlling bottomhole pressure and ECD. A controller controls the energy and thus the speed of the pump in response to downhole measurement(s) to maintain the ECD at a predetermined value or within a predetermined range.

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This international application has entered the national phase early.

GB 2389130 A continuation

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